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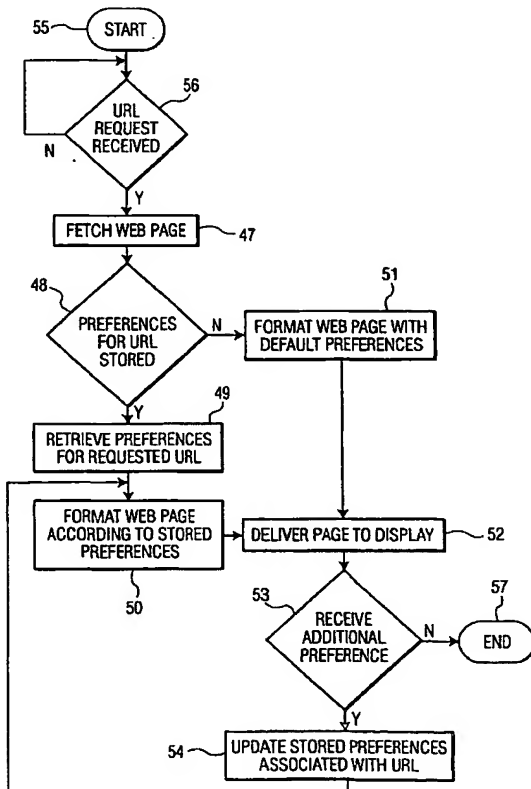
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[Continued on next page]

(54) Title: BROWSER WITH SETTING SAVING FEATURE



(57) Abstract: A web browser is configured to store format preferences associated with favorite and historical URLs so that upon receiving a request for such a URL, a web page is fetched and displayed with the associated stored format preferences. The invention is especially useful with displays of less than optimum resolution such as television screens, cell phones, and personal data assistants where a user may have different preferred formats for different web sites.



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BROWSER WITH SETTING SAVING FEATURE

Cross-Reference to Related Applications

5 Benefit of Provisional Patent Application 60/370,522, filed April 5, 2002, is claimed.

Technical Field of Invention

 This invention relates to the field web browsers, and especially to web browsers used with displays having less resolution than computer monitors, for
10 example television displays.

Background Art

 Systems which receive broadcast signals and generate a display signal for a television set are known as set-top boxes, whether they are actually on top of a television set or any other location outside or within the television set itself. Set-top
15 boxes are currently available for receiving digital satellite television broadcast, cable television broadcast, community antenna service, dial up, cable, or DSL Internet service, or combinations thereof.

 A set-top box formerly sold under the trademark WebTV and now sold as MSN TV viewer, and a set-top box made by Thomson and sold under the trademark
20 DirecTV both have web browsers for receiving web pages over the internet and generating display signals causing the web pages to be displayed on television screens.

 Conventional web browsers for use with conventional computer monitors have "favorites," "favorite places," and "bookmarks," functions that allow a user to save a
25 page, identified in the memory as a URL, and also have "history" function that automatically saves recently accessed ("visited") web pages in the form of a URL in a register. The user can set the history function at different levels, depending on how much memory the user wishes to allocate to such function. Conventional web
30 browsers also have a "text size" setting wherein a user can select from different text size options, for example smallest, small, normal, larger, larger, or largest text sizes, which function to increase or decrease the text size in a web page compared to the size included in the original web page design. In this example, smallest may correspond to 50% of the original size, small may correspond to 75%, normal to 100%, large to 125%, and largest to 150%. After the user changes the text size

selection, all web pages visited will be displayed with the corresponding reduction or increase of text size versus the size designed into the page.

For web browsers generated by set-top boxes for viewing on television screens, the text size option and a graphics size option are usually presented so that the user can increase or decrease the graphics size versus the original design in the page. Other viewing options such as color may also be available in certain browsers.

Since television screens usually have lower resolution than computer monitors, and since the user is usually further from the television screen than from a computer monitor, it is more likely that a user using a web browser displayed on a television will select the increase text size and/or increase graphics size options to make some pages readable. For some pages, the user may have to increase the text size by 125%, and for other web pages, a different scaling ratio may be better.

Since there is no uniformity among web page designs and formats, a set-top box user may have to change text, graphics, and other options very frequently, sometimes for each viewed page. Although web browsers for television screens are generally user-friendly for changing these options because they are used so frequently, the constant readjustment of such options requires extra steps and extra time.

Very similar problems occur with other apparatus having display screens with lower resolution than computer monitors have, for example cell phones and personal data assistants.

Others have attempted to address the problem of text size on displays other than computer screens, for example a current web site, [HTTP://www.DynaLab.com](http://www.DynaLab.com), offers Chinese, Japanese and Korean (CJK) Bitmap, TrueType, ATM, and Postscript fonts for Windows, Macintosh, Unix and Linux platforms which can be used on a variety of devices, from computers to cellular phones.

However, no one has solved the problem of the need to constantly readjust text, graphics, and other options for each viewed web page.

It is an object of the present invention to reduce the need to repeat adjustment of viewing options for web sites that are revisited.

Disclosure of Invention

This object, and others which will become apparent from the following disclosure and drawings, is addressed by the present invention which comprises in

one aspect a system for processing requests for web pages comprising means to fetch a web page upon receipt of a URL request; means to receive format preferences for the fetched web page; means to store the received format preferences for the fetched web page in association with the corresponding URL; 5 means to retrieve the format preferences upon receipt of a subsequent open request for the same URL and to deliver the corresponding web page with the format preferences. A preferred embodiment is a set-top box, which stores viewing option selections along with favorites or bookmark entries and with history entries.

10 In another aspect the invention comprises a method for communicating electronic information using a web browser comprising invoking the browser in a display device, accessing a web page, receiving any user preference settings for the web page, applying the preference settings to the web page, displaying the web page with the preference settings, storing the web page URL associated with the preference settings in a memory register, and upon the next accessing of the web 15 page, retrieving and applying the associated preference settings to the web page.

Another aspect of the invention is a method of displaying a web page with user-preferred formatting for that web page comprising upon receipt of format selections for a displayed web page, storing the format selections in association with a URL for the displayed web page; upon receiving a next request for the same URL, 20 retrieving the previously selected formats for the URL; and displaying the web page with the previously selected formats.

The web page address is stored as a favorite in a favorites register, or is stored as a previously viewed page in a history register, in each case with a cross reference to the last settings selected by the user.

25 The preferred types of settings are graphics and text, although color and other settings may be employed. All of the user selected view settings are stored in association with the URL in favorites, bookmarks, history, or any other memory register for previously viewed pages which makes access to the page faster.

Another aspect of the invention is any apparatus which has a web page 30 generation function and a format preference selection function which stores user selected favorites and/or a log of previously viewed web pages in memory and which stores any user selected format preferences for the favorites and previously viewed pages, having capacity to store any format preference selections for each of them. If

the user has not viewed a web page previously, the web page is displayed with default formatting. If the user selects a favorite from the favorites or bookmark list generated by the browser from a log of favorites which the user has not selected a format preference or changed a previously selected preference, the web page is displayed with default formatting. If the user has viewed a page recently enough that the URL is stored in a history log, the last set of selected preferences is stored and retrieved when the page is viewed.

In some cases, the default set of preferences may be different than the original information in the hypertext transfer protocol or other protocol of the page. For example, the web page may have been designed with 8-point font for certain text and 16 point font for other text. If the web browser has no upscaling or downscaling function activated, the web page is displayed with those font sizes. However, some web browsers have a user global change option. If a user has made a global change selection to double the text size, the new defaults may include a 200% text rescaling function so that the 8-point font is displayed at 16 points and the 16-point at 32 points. In such a case, those 16 and 32 point fonts are displayed unless the user has selected text reduction or text enlargement for a specific page, in which case according to the invention the selected resizing scale for that particular URL is stored in a register for use when the web page is revisited by on that web browser.

The apparatus can be a set-top box either external to or a feature built into a television set, or it can be a hand held device with a web browser, or a cell phone, any other device which is capable of displaying a web browser. It is especially useful for devices that have display screens that have less resolution than the computer monitors for which web page designers have optimized their pages. Of course, it is most useful when the web browser has the capacity to store a log or register or other type memory of favorite web pages and/or a history of previously visited pages.

Brief Description of Drawings

FIG. 1 is an exemplary television-based system with a set-top box with a web browser.

FIG. 2 is a block diagram of a generic system, which includes a television tuner, and some features of a set-top box, which can be programmed to function according to the invention.

FIG. 3 is an exemplary screen display of a web page generated at the URL <http://www.cnn.com> at a particular moment with default text and graphics sizing.

FIG. 4 is an exemplary screen display of the web page of FIG. 1, with 150% text magnification.

5 FIG. 5 is an exemplary screen display of a web page generated at the URL <http://www.audiusa.com> at a particular moment with default graphics magnification.

FIG. 6 is the web page of FIG. 3 with 150% overall magnification, including text and graphics.

FIG. 7 is a flowchart illustrating preferred steps according to the invention.

10 To facilitate understanding, identical reference numerals have been used, where possible, to designate identical elements that are common to the figures.

Modes for Carrying Out the Invention

Referring first to FIG. 1, a system 10 comprising a television 11 having a display screen 12, and a set top box 13 and a remote controller 14 are illustrated.

15 The television signal 15 and Internet connection 16 can be a single cable TV connection connected to a broadband source.

FIG. 2 shows some components of a system, which comprises a TV tuner 17, an operating system 18, one or more application programs 19 such as a web browser program, and program data 20. The system includes a microprocessor 21, primary
20 memory 22, secondary memory 23, and various I/O components 24. The secondary memory 23 may include hard disks, floppy disks, writable compact disk or DVD, or a programmable memory such as EEPROM (electrically erasable programmable read only memory). The I/O components can include the remote controller 14, a
25 video/audio output, a network interface, a television signal input port, a satellite dish receiver, a cell phone antenna, for example. The system can be any at all which is used to generate web pages for a display, but is especially useful for use with displays having less resolution than computer screens generally have.

FIG. 3 is a web browser displayed on a television screen 12 (Fig. 1) where the URL address 26 of the web page 27 is <http://www.cnn.com>. The web browser is
30 displaying the web page with default text 28 and default graphics 29 sizing. A text sizing icon 30 is displayed with a normal size icon 31 within it. A graphics sizing icon 32 is an icon of a magnifying glass with a normal graphics size icon 33 displayed within it. Icons 31 and 33 each include three lights represented by three circles on

the top portions of icons 30 and 32, respectively. As discussed below, the state of the three lights indicates the setting of current sizing. Illustratively, when one or two lights are lit, and the corresponding button, for example icon 30, is pressed, one more light is lit. When all three lights are lit and the corresponding button is pressed, only one light will remain lit. In an alternative, the three lights may represent more than three states: all off, one on and the other two off (a total of 3 states depending on which light is on), two on and the other off (a total of 3 states), and all off. Each state can be assigned a different sizing. Other buttons include Back 34, Refresh 35, Home 36, Close 37, Shuffle Window 38, More 39, and To TV 40. A button 41 called Tools is used to hide or display the browser controls.

FIG. 4 is the same view as FIG. 3 except the text icon 30 has been toggled by the user so that text size icon 31 indicates that text size has been rescaled, and the text 42 is displayed in the browser at 150% of the text size 28 displayed in FIG. 3. When text is normal size, one light is lit, when text scaling is 125%, two lights are lit, and text scaling is 150%, all three lights in icon 31 are lit on the button 30. In Fig. 4, the text is more readable than in Fig. 3, but the user may find that the reformatting of the page to be worse than the small text. The caption "ON CNN TV" must wrap on the text magnified version, but does not wrap on the normal version. Various levels of magnification offer the user flexibility.

FIG. 5 is a web browser displayed in a television screen where the URL address 26 of the web page is <http://www.audiusa.com>; and the web browser is displaying the web page with default text size 28 and graphics 41 sizing. The text icon 30 has icon 31 indicating no increase or reduction, and the graphics icon 32 has icon 33 indicating no increase or reduction, i.e., one light is lit. In FIG. 5, certain text 28 is created using graphics, but is unreadable. Increasing the text size with button 30 would not increase the text size for such text 28, but in FIG. 6, the graphics has been toggled with button 32 to increase the graphics areas, including area indicated as 28 in FIG. 6, so that the graphical text 28 is now readable.

While Fig. 3 compared to Fig. 4, and Fig. 5 compared to Fig. 6 show examples of two web pages and how the text and or graphics may be resized using web browser tools and icons, or pull down menus in other types and styles of web browsers, they do not illustrate the feature of our invention where the text and/or graphics settings for a particular page are stored so that upon revisiting a web site

where text and/or graphics settings had to be adjusted by the user when the page was last viewed, the settings are automatically retrieved and applied to the page. Although these settings per URL may be stored in the primary memory such as RAM, it is preferable to store the settings in the secondary memory such as EEPROM, so that the settings can be retrieved after turning off and then on of the set-top box.

Actually, the user does not revisit a particular web page, but rather revisits a web site, which is identified by a URL. For example, the URL may be <http://www.cnn.com>, <http://www.audiusa.com>, or any of the millions of URLs registered by registration services. When the web site is chosen by the user by any method, for example by selecting a stored favorite from a favorites or bookmarks menu, by typing in a URL, or by clicking on link to the URL, the actual web page may be different than the previous visit to the web site. For news sites such as www.CNN.com, the web page may be changed many times a day. However, the text size and graphics sizing and other formatting features for a particular URL, i.e., web site, usually remain the same for long periods. It is that phenomenon which makes the present invention useful since the saved formatting preferences will usually adjust formats to preferred levels for a revisited URL, regardless of the changes to the web page content at a particular web page. In other words, the if the text size and graphics size on a web page at a particular web site are too small the first time it is accessed by a user, they will very likely be too small the next time that web site is accessed by that user.

FIG. 7 is a flow chart of a process, which starts at 55 with a URL request being received as determined at decision block 56 by the set-top box or other apparatus that runs the web browser software, which invokes a fetch 47 of the corresponding web page. The URL may be requested by clicking on a favorite or bookmark, clicking on a URL in another web page, by typing in a URL address, clicking on a hyperlink in an e-mail note, or in any other method known or which becomes known in the art.

If a format preference for that URL has been stored as determined at decision block 48, the URL-associated stored preference is retrieved at 49 and the fetched page is rendered at 50 with those stored preferences which, as mentioned above, can be text sizing, graphics sizing, or any of a number of other types of preferences, depending on the design of the web browser. If there are no stored preferences for the requested URL, the corresponding web page is fetched and rendered with

defaults, which may be no resizing or may be a global resizing option which the user has selected for all pages. The rendered pages are displayed at 52. If new preferences such as text or graphics, for example, are received at 53, the preferences for that particular URL are updated and stored in memory 54. If no additional preference is received at this point, the process ends 54 and starts again at 55 when a new URL or the same URL is requested. Alternatively, the browser may update the preferences for an URL when a user has decided to leave the web site addressed by the URL, for example, by entering a new URL at the address box.

While this invention has been described in detail with respect to a particular mode of web browser and for two URLs, and for just text and graphics format features, and only with regard to televisions having web browsers, the invention has applicability to many other types of apparatus such as cell phones, personal data assistants, and many other types of systems which access web sites for display on viewing screens. It would also have applicability to many other URLs, other format options, other apparatus such as web sites which provide audio, video, photos, email, and other objects where, for example, sound level or video qualities may be adjusted by the user. Furthermore, the web pages may be retrieved from an intranet in a private http-based system rather than connected to the Internet. Many other alternatives, modifications, and improvements should be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.

CLAIMS

1. A method of communicating electronic information using a browser, the method comprising the steps of:

- a. invoking the browser in a display device;
- b. accessing a web page by specifying a URL in the browser;
- c. retrieving a saved preference setting for the URL from a memory;
- d. applying the retrieved preference setting to the web page; and
- e. displaying the web page on the browser.

2. The method of claim 1 wherein the saved preference settings are text and/or graphics settings.

3. The method of claim 1 wherein the web page is displayed on a display other than a computer monitor selected from a television screen, a cell phone, and a personal data assistant.

4. The method of claim 1 wherein the URL is specified in the browser by entering the URL in an address box field in the web browser, by clicking on a hyperlink, or by selecting a favorite or bookmark from a stored list.

5. A method of displaying a web page with user-preferred formatting for that web page, the method comprising the steps of:

- a. upon receipt of format selections for a displayed web page, storing the format selections in association with a URL for the displayed web page;
- b. upon receiving a next request for the same URL, retrieving the previously selected formats for the URL; and

c. displaying the web page with the previously selected formats.

6. The method of claim 5 wherein the formats are text and graphics sizing.

7. The method of claim 6 wherein the web pages are displayed on a display other than a computer monitor selected from a television screen, a cell phone, and a personal data assistant.

8. The method of claim 5 wherein the request for the same URL is obtained by a user click on a hyperlink in a different web page, by a user entering the URL in an address box on a web browser, or by a user selecting a favorite or bookmark from a stored list.

9. The method of claim 5 wherein previously selected formats are stored in association with corresponding URLs in a history registry and/or with corresponding URLs in a favorites registry.
- 5 10. The method of claim 5 wherein previously selected formats are stored in association with corresponding URLs in a history registry and/or with corresponding URLs in a favorites registry.
11. A system for processing requests for web pages comprising
 - a. means to fetch a web page upon receipt of a URL request;
 - b. means to receive format preferences for the fetched web page;
 - 10 c. means to store the received format preferences for the fetched web page in association with the corresponding URL;
 - d. means to retrieve the format preferences upon receipt of a subsequent open request for the same URL and to deliver the corresponding web page with the format preferences.
- 15 12. The system of claim 7 wherein the format preferences text preferences and/or graphics preferences.
13. The system of claim 7 comprising a microprocessor, application program, storage, and I/O components.
14. The system of claim 9 further comprising a display selected from a television
20 screen, a cell phone display, and a personal data assistant display.
15. The system of claim 7 having means to deliver a web browser to a display, means to receive user selections, and means to format web pages according to stored user preferences associated with a corresponding URL.
16. A computer program embodied on a computer readable medium for displaying
25 a web page with user-preferred formatting for that web page, the program comprising:
 - a. a code segment for receiving format selections for a displayed web page, and storing the format selections in association with a URL for the displayed web page;
 - 30 b. a code segment for receiving a next request for the same URL, and for retrieving the previously selected formats for the URL; and
 - c. a code segment for displaying the web page with the previously selected formats.

17. The computer program of claim 15, wherein the code segment for receiving the format selections stores the format selections in a primary memory.
18. The computer program of claim 15, wherein the code segment for receiving the format selections stores the format selections in a secondary memory.
- 5 19. The computer program of claim 15, wherein the code segment for receiving the format selections stores the format selections in association with corresponding URLs in a history registry and/or with corresponding URLs in a favorites registry.
- 10 20. The computer program of claim 15, wherein the code segment for receiving the next request for the same URL receives the next request from a user clicking on a hyperlink in a different web page, entering the URL in an address box on a web browser, or selecting a favorite or bookmark from a stored list.
21. The computer program of claim 15, wherein one of the format selections is text size.

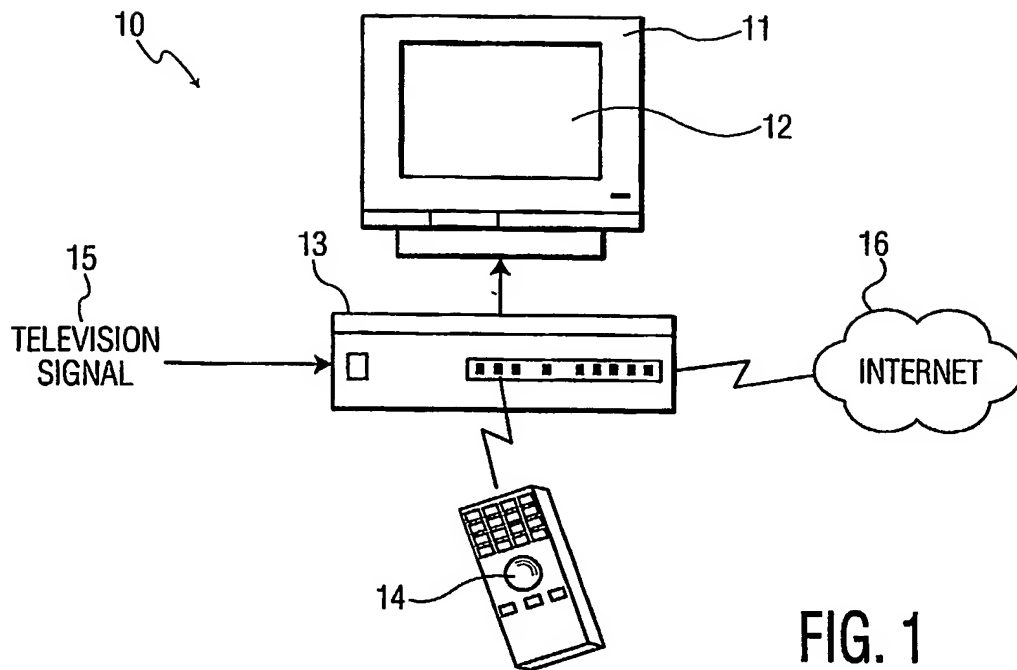


FIG. 1

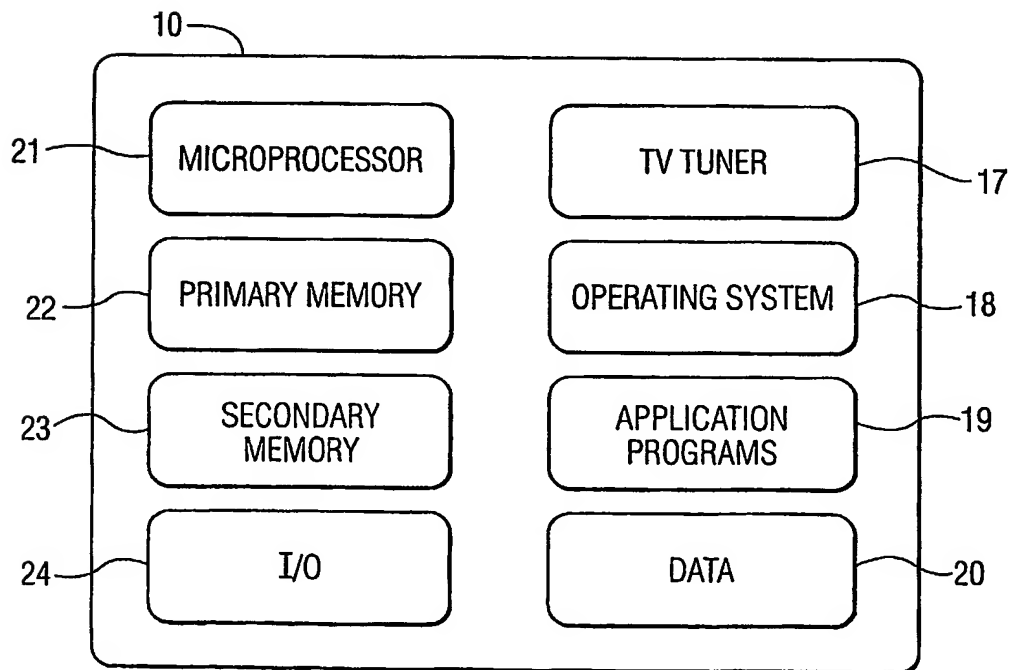


FIG. 2

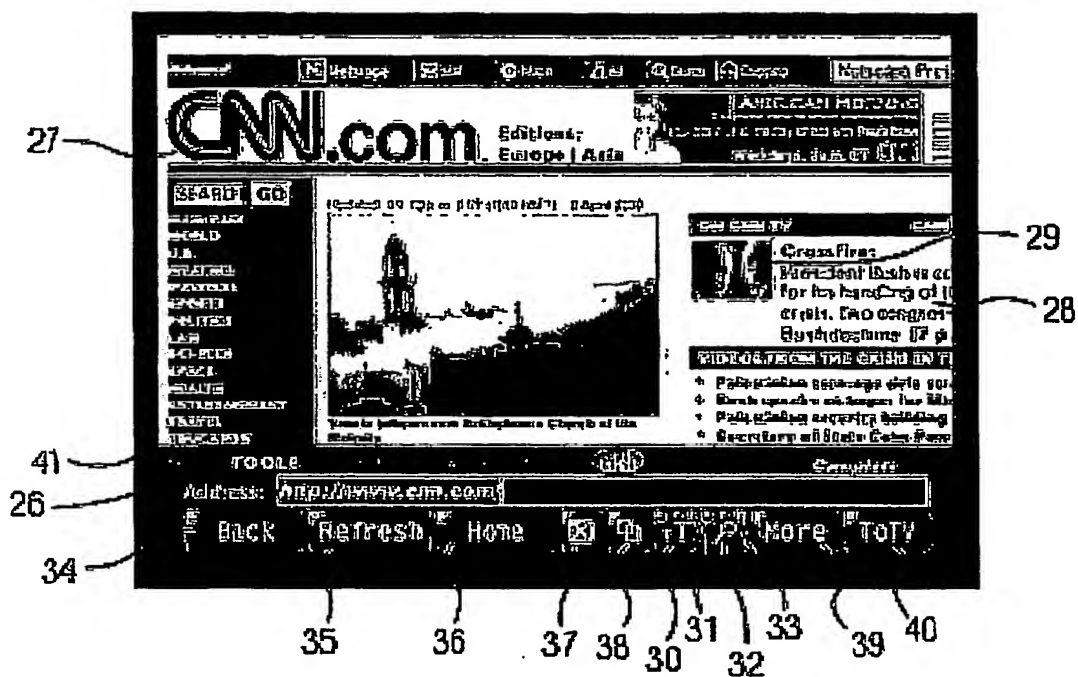


FIG. 3

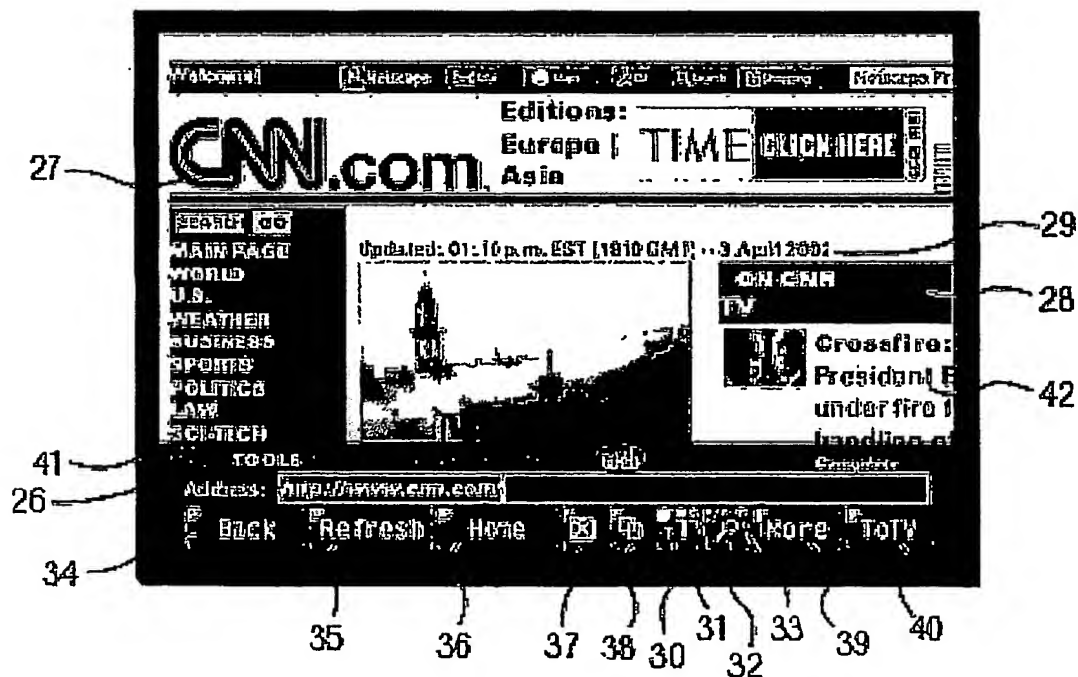


FIG. 4

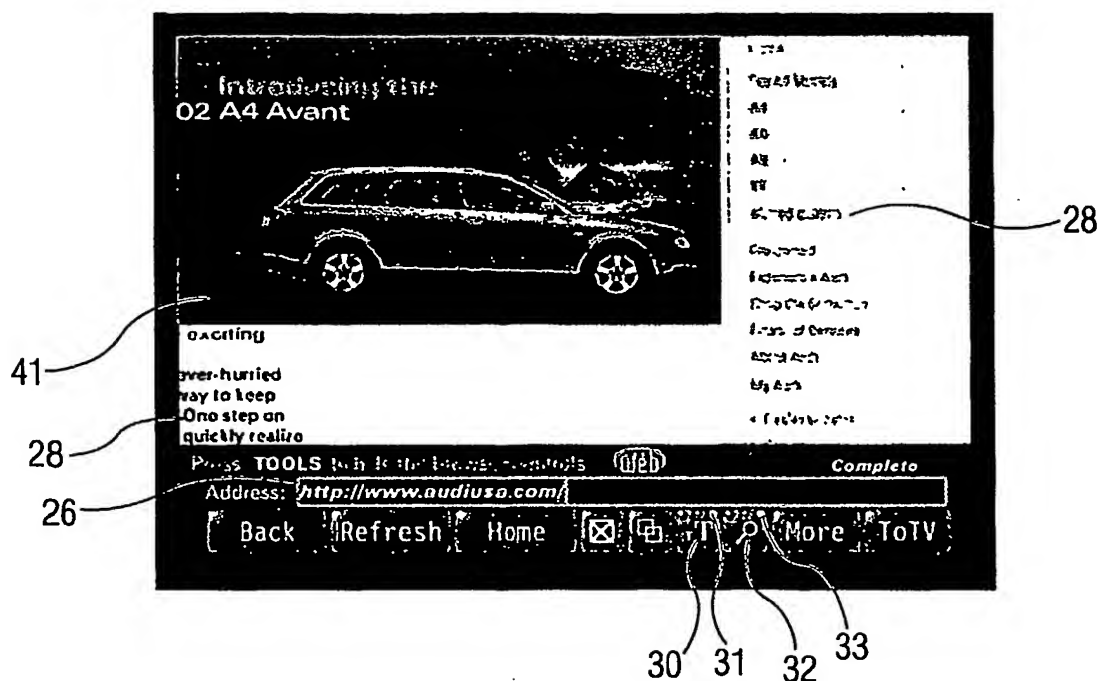


FIG. 5

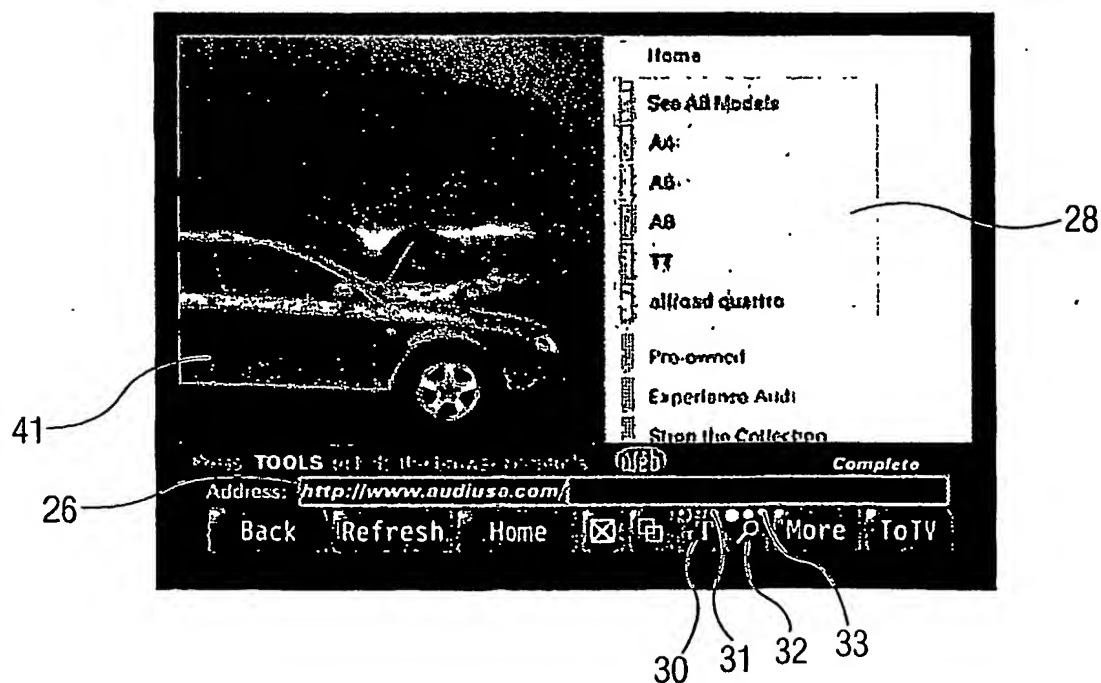


FIG. 6

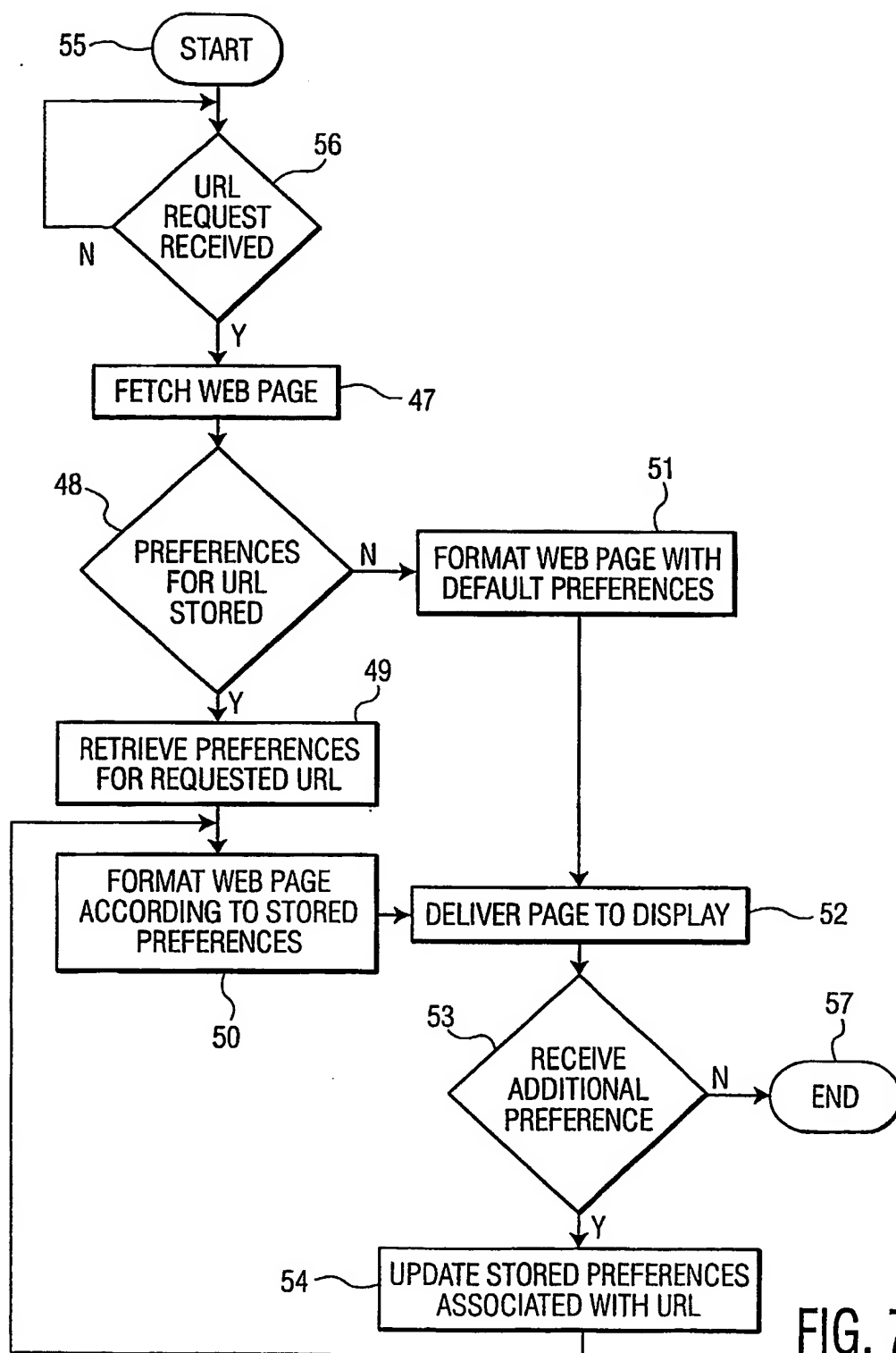


FIG. 7

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/10057

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, WPI Data, BIOSIS, COMPENDEX, EMBASE, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>PATENT ABSTRACTS OF JAPAN vol. 2000, no. 11, 3 January 2001 (2001-01-03) & JP 2000 222276 A (INTERNATL BUSINESS MACH CORP &LT;IBM&GT;), 11 August 2000 (2000-08-11) abstract -& US 6 457 030 B1 (HILD STEFAN G ET AL) 24 September 2002 (2002-09-24) column 2, line 13 - line 47 column 4, line 5 - line 11 column 5, line 59 -column 7, line 9; figure 1A column 8, line 45 -column 10, line 47 --- -/--</p>	1-21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the International search

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Sanandr s Ledesma, J

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/10057

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 811 939 A (WEBTV NETWORKS INC) 10 December 1997 (1997-12-10) column 6, line 21 -column 8, line 34; figures 5-7 column 12, line 33 - line 50 ---	1-21
X	EP 1 100 022 A (FUJITSU LTD) 16 May 2001 (2001-05-16) paragraph '0001! - paragraph '0013! paragraph '0030! - paragraph '0080!; figures 8,9 ---	1-21
X	EP 0 944 009 A (NORTEL NETWORKS CORP) 22 September 1999 (1999-09-22) paragraph '0002! - paragraph '0004! paragraph '0028! - paragraph '0046!; figure 6A paragraph '0058! - paragraph '0060! ---	1
A	BICKMORE T ET AL: "WEB PAGE FILTERING AND RE-AUTHORING FOR MOBILE USERS" COMPUTER JOURNAL, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 42, no. 6, 1999, pages 534-546, XP000920338 ISSN: 0010-4620 the whole document -----	1-21

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/10057

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2000222276	A	11-08-2000	US 6457030 B1	24-09-2002
EP 0811939	A	10-12-1997	US 5918013 A	29-06-1999
			AU 3375197 A	05-01-1998
			EP 0811939 A2	10-12-1997
			JP 10228437 A	25-08-1998
			KR 274738 B1	15-12-2000
			US 6505232 B1	07-01-2003
			US 2001003823 A1	14-06-2001
			WO 9746943 A1	11-12-1997
			US 6023268 A	08-02-2000
			US 6230319 B1	08-05-2001
			US 6141693 A	31-10-2000
			US 2003014499 A1	16-01-2003
			US 6330606 B1	11-12-2001
			US 6311207 B1	30-10-2001
			US 6332157 B1	18-12-2001
			US 6259442 B1	10-07-2001
			US 6308222 B1	23-10-2001
			US 5940074 A	17-08-1999
			US 6073168 A	06-06-2000
			US 5935207 A	10-08-1999
			US 5996022 A	30-11-1999
			US 5974461 A	26-10-1999
			US 2002013812 A1	31-01-2002
EP 1100022	A	16-05-2001	JP 2001134610 A	18-05-2001
			EP 1100022 A1	16-05-2001
EP 0944009	A	22-09-1999	US 6219679 B1	17-04-2001
			EP 0944009 A2	22-09-1999